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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,312	04/19/2004	Paul B. Corkum	PAT 892-2 US	9811
26123 7590 01/26/2007 BORDEN LADNER GERVAIS LLP WORLD EXCHANGE PLAZA 100 QUEEN STREET SUITE 1100 OTTAWA, ON K1P 1J9 CANADA			EXAMINER DUPUIS, DEREK L	
			ART UNIT 2883	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/26/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,312	<b>Applicant(s)</b> CORKUM ET AL.	
	<b>Examiner</b> Derek L. Dupuis	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/18/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/10/2007 has been entered.

### ***Response to Arguments***

2. Applicant's arguments filed 1/10/2007 have been fully considered but they are not persuasive. In pages 5-7, applicant argues that the following two structural limitations are inherently imparted by the product by process limitation of being "optically written":

a) the index of refraction of the optical connection path is higher than that of the bulk dielectric, and

b) the index of refraction profile of the optical connection path is correlated to the optical signal energy intensity profile used in the forming of the optical connection path.

The examiner respectfully disagrees with the inherency of these structural limitations. Applicant relies on the disclosure of a reference (2003/0235385) to show this feature; however this structural limitation is the result of a very specific type of optical writing, namely, that described in paragraph 51 of the reference. Applicant has attempted to take the structure that is resultant from a very specific type of the optical writing, and claim that it would inherently be imparted from any type of optical writing procedure. Regarding the second feature, this is not a "structural limitation" in any sense since its scope is defined by the process of making it (the

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energy intensity profile) of the optical writing instrument. The refractive index profile of a path created by an unclaimed, generic energy profile results in a broad scope of coverage that would include any optical connection path.

3. In pages 6 and 7, applicant also argues that the path is not within a bulk dielectric. The examiner disagrees. The reference clearly teaches that the path is within a dielectric slab (see paragraphs 26-28). A slab is a bulk material.

4. The previous office actions and the responses from the applicant have centered upon the product by process limitation of being "optically written". Upon closer inspection of the reference, the examiner believes that it would have been obvious to one of ordinary skill in the art to optically write the connection path based upon a suggestion in the reference. A new grounds of rejection has been set forth below accordingly.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Flory et al* (US 2004/0126055 A1) in view of *Li et al* (US 2003/0223720 A1).

7. Regarding claims 1, 3-10, 13, and 14, Flory et al teach an optical connector comprising a three-dimensional optically-transmissive bulk dielectric (31) with an input (32) path and an output path (33, 34) written within the bulk dielectric (31). The input path (32) and the output

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path (33, 34) are connected so as to transmit a light signal between an input component and an output component. The three-dimensional bulk dielectric is a prism as seen in figures 1 and 2. The connection paths are waveguides and the connection paths are bent as shown in figure 2. Flory et al also teaches that the connection path can be a straight through path. The photonic structure results in local modifications in the refractive index thus creating the waveguiding structure. The photonic crystal waveguide has a high degree of efficiency with low losses including a low loss at a 90 degree bend. Flory et al also teach that a plurality of connection paths can be written within the bulk dielectric to connect multiple inputs and outputs. See paragraphs 4, 5, 26-30, and 51-57.

8. Flory et al do not explicitly state that the defect sites that make up the optical connection path are optically written within the bulk dielectric. Li et al disclose a process for creating defect sites in a photonic crystal where a beam of laser energy is directed upon a hole/post of the photonic crystal to modify the index of refraction to permit light transmission (see abstract).

9. It would have been obvious to one of ordinary skill in the art at the time of invention to write the connection path taught by Flory et al using an optical writing process as taught by Li et al. Motivation to do this would be the suggestion by Li et al to create the defect regions that make up the connection path by "modifying selected posts" of the periodic crystal (see paragraph 56).

10. Regarding claims 2, 11, and 15, Flory et al in view of Li et al teach an optical connector as discussed above. Flory et al do not explicitly teach that the bulk dielectric material is made of glass. However, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use glass as the dielectric material since the examiner takes official notice

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of the equivalence of glass and other dielectric materials for their use in the optics art and the selection of any of these known equivalents to form a waveguiding structure would be within the level of ordinary skill in the art.

11. Flory et al teach that the bent connection path includes two orthogonal (90 degree) waveguides disposed in the bulk dielectric. However, Flory et al do not explicitly teach that the connection between the waveguides is a TIR connection with a polished surface. Applicant has admitted in the reply filed on 4/10/2006 that "the selection of a TIR connection or a photonic crystal structure are well-known equivalents for providing a bent waveguide while limiting bending losses at the turn." Therefore, the selection of any one of these admitted equivalents would be "a matter of design preference" and one of ordinary skill in the art would have found it obvious to substitute a TIR connection for a photonic crystal structure.

12. Flory et al teach that multiple connection paths can be duplicated in the bulk dielectric. It would have been obvious to one of ordinary skill in the art at the time of invention to use a plurality of stacked connectors to form a connector assembly since it has been held that the mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Derek L. Dupuis  
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Frank G. Font  
Supervisory Patent Examiner  
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